A STUDY OF THE APPLICATION OF SKYLAB EREP DATA TO AGRICULTURE IN THE MISSISSIPPI DELTA ALLUVIAL PLAINS REGION

EREP Investigation No. 399

April 23, 1974 - July 23, 1974

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Quarterly Report

PREFACE

The object of this investigation is to explore the possible uses of Skylab EREP data in making agriculturally oriented decisions. The area of concern for this study is in the Mississippi Delta region, near Stoneville, Mississippi. Skylab MSS data will be analyzed through computerized pattern recognition programs by ERL at NASA/MTF. This derived information will then be formatted in a style to be agreed upon as being the clearest presentation of the most useful data, probably a color coded map and corresponding statistics. Results of a similar study, utilizing ERTS satellite data, will be used to optimize the data format.

MSU researchers will then identify possible low and intermediate level users and acquaint them with the Skylab data product. Through interviews it will be determined what are the possible uses of this data, what time table of data delivery, what particular information is most useful to them, what format would be optimum for presentation of this information, and what changes (i.e. additional information) could make the data of more value to them. Using this information, and evaluation of Skylab EREP data's usefulness in making agricultural decisions will be made.

INTRODUCTION

This quarterly report covers the period of April 23, 1974 through July 23, 1974.

During and before this period, the ground truth data portion of this program has been performed and ground truth data has been recorded and is on file. Data flow and communication between ERL-NASA/MTF, NASA-JSC and MSU have been exercised. Ground truth data has been gathered in the area of the EREP pass over northwest Mississippi.

STATUS

Data on agricultural test plots was taken with each EREP pass over the test area. Our plan was to use the same plots instrumented for ERTS to obtain the ground truth necessary to process Skylab MSS data. However, in that Skylab's original orbit was some 60 nm west of its intended orbits, these fields were not initially covered by EREP. For Skylab 4 the orbit passed over the instrumented fields and these fields were used to report the studies on the Skylab EREP data. Table I presents a listing of Ground Truth Test Plots with the crop and field size as of September 1973.

During the recent Skylab EREP P.I. Data Meeting (held July 16-18 at JSC in Houston) investigators for this project reviewed the S 192 data to determine all data useful for this investigation. Results of

TABLE I

GROUND TRUTH TEST SITES FOR EREP

September 1973

TEST SITE NUMBER	CROP	NUMBER OF ACRES	WEEDS
1	Rice (Starbonnet)	150	(clean)
2	Rice (Starbonnet)	100	(clean)
3	Rice (Bluebell)	300	(clean)
4	Soybeans (Semmes)	150	(clean)
5	Soybeans (Bragg)	300	(moderate)
6	Soybeans (Bragg)	150	(clean)
7	Soybean (Lee 68)	73	(clean)
8	Soybean (Lee 68)	200	(heavy)
9	Soybean (Lee 68)	180	(light)
10	Cotton	120	(light)
11	Cotton	300	(heavy)
12	Cotton	100	(clean)

this review are given in Table II. Thirteen seconds from EREP 15 and nineteen seconds from EREP 87 is the only data requested for this investigation. Only S 192 data is used in this study. Computerized agricultural classification will be implemented with the S 192 data when it is received.

RECOMMENDATIONS

Continued liaison with Dr. A. T. Joyce and Dr. R. H. Griffin at NASA-ERL-MTF will provide for computer generated maps and statistical data for use in the study.

The fiscal status of the project is summarized below with approximate figures.

Expenditures to date:	$29,000
Dedicated funds:	6,000
TOTAL Committed funds:	$35,000
Approximate Remaining Funds:	$10,000

A minimum effort is currently being funded to save contract dollars until 192 data is available. However, with this temporary minimum effort the funds available will be expended before April 1975. An additional $8,000.00 is being requested by letter to Dr. W. Mooneyhan, MTF, with carbon copy to Mr. Clayton Forbes, Houston, so that a proper field interviewing effort can be carried out.

TABLE II

S 192 Data Taken Over the

Mississippi Delta

SL 2 -- pass 10, track 5, 12 June 1973, EREP 10

This data is north of the investigation site and quite cloudy. Screening film for this pass has been recieved and forwarded to MTF.

SL 3 -- pass 4, track 62, 5 August 1973, EREP 15

Good data over the southern part of the investigation site (northern part not covered). MTF has requested CCT's for this pass.

SL 3 -- pass 31, track 15/16, 15 September 1973, EREP 42

This data covers the northern half of the site (the only data to do so) but is completely cloudy over the site area.

SL 4 -- pass 8, track 62, 3 December 1973, EREP 58

Same coverage as EREP 15. There is a considerable cloud cover over the site area.

SL 4 -- pass 35, track 62, 21 January 1974, EREP 87

Same coverage as EREP 15. This data is excellent. Data from this pass was ordered while at the meeting.

EXPECTED ACCOMPLISHMENTS

When data from the Skylab EREP package is available it will be analyzed to determine its utility in the study area. The channels of data flow and communication between ERL and MSU will be kept open and active for the EREP Program as well as through other cooperative efforts in the ERTS Program.

OUTLOOK

The outlook for the project is good, subject to the delivery of the computer generated maps. The first land use classification from ERTS-1 data using spectral signature analysis by NASA-ERL-MTF is very promising, and the increased resolution afforded by Skylab's lower orbit should add significantly to the usefulness of this type of information.

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